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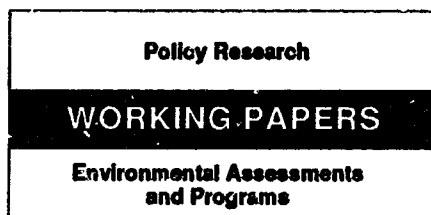
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Indigenous Territories and Tropical Forest Management in Latin America

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For successful management of tropical forests there must be a new type of partnership between indigenous peoples, the scientific community, national governments, and international development agencies. This relationship should be a contractual one, in which indigenous peoples are provided with juridical recognition and control over large areas of forest in exchange for a commitment to conserve the ecosystem and preserve biodiversity.



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This paper — a product of the Environmental Assessments and Programs Division, Environment Department — is part of a larger effort in the department to seek ways of incorporating indigenous peoples and their traditional cultural knowledge into biodiversity conservation and natural resources management. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Shelton Davis, room S5-109, extension 33413 (February 1993, 31 pages).

Using data from Latin America, Davis and Wali argue that fundamental changes must take place in the legal recognition and demarcation of indigenous territories if indigenous peoples are to fulfill their potential as resource managers for threatened tropical forest ecosystems.

Davis and Wali compare different national land tenure models for forest-dwelling indigenous peoples (contained in national Indian, agrarian, and protected-area laws in Latin America) and a model proposed by indigenous organizations in Latin America.

The conventional models emerged during an era when most governments were more concerned with the rapid occupation and exploitation of frontier zones and the assimilation of indigenous peoples. Recent attention to the environmental degradation of these areas and the

need to create alternative models of land use and development have directed attention to the potential contribution of indigenous peoples to the conservation and management of the vast tropical forests of Latin America.

Davis and Wali find that indigenous peoples must be given some degree of control over their territories and resources. They contend that for successful management of tropical forests there must be a new type of partnership between indigenous peoples, the scientific community, national governments, and international development agencies. This relationship should be a contractual one, in which indigenous peoples are provided with juridical recognition and control over large areas of forest in exchange for a commitment to conserve the ecosystem and preserve biodiversity.

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**Indigenous Territories and Tropical Forest
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Abstract

Indigenous peoples have received much attention as potential resource managers of threatened tropical forest ecosystems. Using data from Latin America, this article argues that fundamental changes need to take place in the legal recognition and demarcation of indigenous territories in order for this potential to be fulfilled. A comparison is made between different national land tenure models for forest-dwelling indigenous peoples and a model proposed by Latin American indigenous organizations. This comparison suggests that not only do indigenous peoples need to be provided with some degree of control over their territories and resources, but there needs to be a new type of partnership among indigenous peoples, the scientific community, national governments and international development agencies for the management of tropical forests.

The past decade has witnessed a proliferation of research and writing on the extent and ecological implications of tropical deforestation in Latin America. Current estimates are that the region's tropical forests are being cleared at a rate of 0.5 percent annually in South America and 1.6 percent annually in Central America. While research and scientific discussions continue,

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there is growing evidence that tropical deforestation contributes to adverse changes in global climate, loss of genetic diversity which may be critical to human survival and the impoverishment of local communities and economies. An international consensus exists on the need to establish policies and programs for the conservation and sustainable development of these forests (1-3).

Social scientists and ecologists have been instrumental in illuminating the potential role of indigenous forest-dwellers in counteracting tropical deforestation. When still intact, indigenous forms of land use and natural resource management maintain forest habitats. Indigenous peoples have a sophisticated knowledge of biodiversity and depend upon it for their social and cultural survival. Their farming systems have been documented to be ecologically sustainable and potentially able to support much larger populations than indicated by previous research. Finally, recent research and practice suggest that under conditions of modernization (i.e., incorporation into regional and international markets), these systems can be modified to produce surpluses that contribute to local and national economic development (4-6).

So far, those who have advocated the participation of indigenous peoples in prevention of deforestation have emphasized precisely these ecological and economic advantages. Much less attention has focussed upon the juridical and socio-political requirements for securing an adequate territorial base for indigenous peoples. Without such territorial security, it will be difficult (if not impossible) for indigenous peoples to have a more active and significant role in tropical forest management (7).

This article addresses the issue of indigenous territorial protection in Latin America, and links it to the broader debate concerning deforestation and tropical forest management. Our contention is that indigenous peoples' positive and active participation in tropical forest conservation will only occur if: (a) they are provided with legal security to territories which are sufficiently large for sustainable resource management; (b) the governments of Latin America provide adequate legal and police protection to such territories; (c) the indigenous peoples have the power to make decisions concerning the use of natural resources within these territories; and, (d) they are provided with adequate training and

technical assistance to adapt their traditional land-use systems to modern economic conditions. We further contend that scientists and public-policy makers cannot afford to overlook these social, juridical and technical issues relating to indigenous territories if lasting solutions are to be found for the management of tropical forests.

To demonstrate the validity of this argument, case materials are drawn from several Latin American countries. These cases reflect competing national legal and administrative models for securing indigenous land tenure. Most of these models do not recognize indigenous land-use systems and hence are not conducive to sustainable forest management. However, recently an innovative model has been promulgated by indigenous peoples themselves which has promise of responding to the tropical forest crisis (8).

We start with a discussion of indigenous land use and spatial conceptions, because the link between land use and cultural values is fundamental to the definition of territory. We then provide a brief description of the history and differences among four contemporary land tenure models in Latin America. After this, we compare these models and analyze the potential for preventing deforestation of the "indigenous territory" model proposed by Amazonian indigenous organizations. We also discuss the conditions necessary for implementing and replicating this model, particularly the formulation of a new type of relationship among indigenous peoples, the scientific community, national governments and international development agencies for the management of tropical forests.

Indigenous Land Use and Spatial Conceptions

Most indigenous forest-dwellers practice a mixed subsistence economy based upon horticulture, wild plant gathering, hunting and fishing. These mixed subsistence systems rely on simple technologies and an extensive knowledge base which allows for the sustainable extraction of natural resources from an essentially fragile environment. Among other things, indigenous forest dwellers have been documented to possess knowledge of the carrying capacity of soils, the successional dynamics of forests, the medicinal properties of plants, and the

behavioral and ecological adaptations of animals. This knowledge has been accumulated through thousands of years of human experimentation, as indicated by recent archaeological research in the Amazon (9-11).

Because of the variability of lowland tropical environments, there has been a range of adaptations of the indigenous societies from nomadic foragers to settled agriculturalists. Lowland indigenous groups have also adapted to new socio-cultural, as well as environmental, conditions. There are documented cases of these groups shifting their patterns of subsistence from foraging to horticulture, and from greater or lesser dependency on hunting and/or fishing. The environmental knowledge and adaptations of these societies are not static, but have changed as the lowland forest environments in which they live have evolved and changed (10, 12).

Despite this variability, there are certain cultural continuities which have organized indigenous societies and worldviews. Magical specialists or shamans, for example, play a significant role in the control of social behavior, as well as in the management and control of natural resources. Food, hunting and gardening taboos regulate social and reproductive practices, along with diet (13). Linked to these institutions and practices is a worldview which varies among peoples but which posits a unity between humankind and nature. To quote the Colombian anthropologist G. Reichel-Dolmatoff in reference to the Tukano of Colombia,

Nature in their view is not a physical entity apart from man and, therefore, he cannot confront it or oppose it or harmonize with it as a separate entity. Occasionally man can unbalance it by his personal malfunctioning as a component, but he never stands apart from it. Man is taken to be a part of a set of supra-individual systems which -- be they biological or cultural-- transcend our individual lives and within which survival and the maintenance of a certain quality of life are possible only if all other life forms too are allowed to evolve according to their specific needs, as stated in cosmological myths and traditions (14).

These indigenous cosmologies give primacy to the symbolic configuration of space in both the natural and supernatural worlds. In some indigenous societies, for instance, the long-houses inhabited by living Indians are replicated in the living arrangements (and rituals) of the ancestors. The ancestors, along with

other supernatural beings such as animal spirits, regulate both the everyday use of space and the activities of human and animal communities (14, 15).

The creation myths of these societies often contain contemporary place names and provide a "cultural cartography" of the territorial boundaries of indigenous groups. As another ethnographer who also studied Tucano-speaking groups notes, "virtually every landmark in the forest or along the river has some significance in the myths of origin of one group or another" (16).

These symbolic conceptions of space are integral to the cultural identity, health and social organization of indigenous forest peoples. Along with indigenous environmental and land use knowledge, they need to be taken into account in land tenure policies and the delineation of indigenous territories, if these are to have a positive effect upon the conservation of the forest ecosystems. Linking these cultural conceptions with ecological and economic considerations provides an integrated approach to the conservation of forest ecosystems and is more in keeping with the land-extensive subsistence practices of forest-dwelling societies.

To incorporate indigenous environmental knowledge, land use practices and conceptions of space into an indigenous territorial model entails combining detailed ethnographic, historical and ecological research. Only recently, however, have some attempts (albeit very preliminary) been made to calculate the possible size of such territories. In Peru, for example, a study among the Achuara Indians demonstrated the existence of two culturally-relevant ecological zones: one for hunting, fishing, and gathering based upon the distances travelled by male hunters; and, the other for shifting cultivation of gardens based upon female work effort. By calculating the minimal amount of land necessary for each of these activities and combining them together, the study provided an estimate of the minimum size of the "ethnic territory." The study also allowed for demographic growth based upon a 1 percent annual growth rate over a generation. For one community, which had a population of 1,198 people, the study calculated that the total indigenous territory would need to be 164,950 hectares (17).

While much work still needs to be done on the nature and size of indigenous

territories, it is clear that national policy makers have had little understanding of either the dynamics of indigenous land use or the symbolic and cultural meanings which indigenous forest-dwellers give to space. To the contrary, most national policies until recently embodied the prejudices of colonial governments, which looked upon indigenous forest-dwellers not as resource managers who possessed sophisticated ecological knowledge, but as "primitive" peoples who should be pacified, civilized and eventually incorporated into western culture. This is reflected not only in the policies of colonial governments toward indigenous forest-dwellers, but also in the more recent land tenure policies of Latin American countries.

National Policies Toward Indigenous Forest-Dwellers

Historically, one can trace three trends in policies toward indigenous forest-dwellers, especially during the national period. The first trend, which emerged in late 19th and early 20th century Latin America, was protectionism. This policy resulted from international protests surrounding slavery and other depredations that accompanied the rubber boom, and was promoted by moral crusaders in several countries. The basic notion of this policy was that the indigenous forest-dwellers were incapable of protecting themselves against the ravages of frontier expansion and hence needed to be "entrusted" to outside agents, whether they be the Catholic Church as in large sections of Spanish America, or government agencies, such as the Indian Protection Service (SPI) established in 1910 in Brazil. One of the major consequences of this policy was that the lands occupied by indigenous peoples were given over to religious orders or designated as "national territories" (18, 19).

In this same tradition of protectionism, after World War II, several Latin American governments contracted North American evangelical missionary societies to make contact with and acculturate still isolated forest-dwelling tribes (20).

At the same time, a second trend emerged which departed from these protectionist policies. This trend was based on post-war theories of development and called for the integration of indigenous peoples into regional plans designed to foster national economic growth. During this period, governments and

international development planners saw the lowland tropical frontiers as escape valves for demographic growth and social tensions in other rural areas and as zones with high potential for natural resource exploitation. Access to the regions became a priority, and international aid was solicited for the purposes of road construction and land settlement. Instead of phrasing indigenous policies in terms of protectionism, the governments attempted to integrate the Indians into national colonization through organizing them into cooperatives or other types of communal structures and by promising to provide them with lands under agrarian reform programs (21).

It was during this period that the International Labor Organization drafted its Convention No. 107 (1957) on the integration of tribal and indigenous populations, and that several Latin American governments passed legislation regarding indigenous lands (22, 23).

In the 1960s, a third trend emerged which was influenced by the world conservation movement. This trend, which we shall call preservationism, set aside large areas for the protection of indigenous peoples, wildlife and the environment. Perhaps, the classic example of this trend was the establishment of the Xingu Park in Brazil, which set aside a large area in the state of Mato Gross for the protection of nearly a dozen tribal societies and the habitats where they lived (24). For a brief period, several other national parks which contained indigenous peoples were created in Brazil and a few other South American countries. Following the establishment of the UNESCO "Man and the Biosphere" Program, some of these national parks were designated as biosphere reserves (25).

These three trends have shaped the policies and land tenure arrangements which governments continue to implement for forest-dwelling indigenous populations. A common feature of all of these policies is a lack of recognition on the part of national governments of indigenous territories and a premise that indigenous peoples would either be acculturated to Western practices or preserved in their "primitive" state. In no country, at least until recently, has there been a recognition of the capacity of indigenous peoples to make knowledgeable decisions about land and resource use.

Models of Land Tenure for Indigenous Peoples

In order to demonstrate the political and administrative obstacles and ecological consequences which have resulted from the above trends, it is necessary to describe the varying and sometimes overlapping land tenure models which have been applied to indigenous peoples in different national contexts.

Indian Reserves (Brazil). The Brazilian Indian reserve system is the clearest case of a land tenure model that resulted from protectionist policies toward forest-dwellers. As far back as the 1920s, the SPI established a series of Indian posts in the Brazilian backlands, which were meant to sedentarize and protect forest-dwellers from harmful elements along the frontier. Recognizing the importance of land to the survival of these forest-dwelling groups, it negotiated with state governments and federal agencies to set aside reserve areas. These areas, according to Brazilian law, would be federally registered in the name of the SPI and eventually serve as a property base for the evolution of Indians from their status as forest-dwellers to that of settled agriculturalists (18).

In 1967, when the government disbanded the SPI and established the National Indian Foundation (FUNAI), it legally created a series of Indian parks and reserves, especially in the Amazon region where most of Brazil's remaining 220,000 indigenous people live. The legal basis for this reserve system was contained in the 1967 Brazilian Constitution and incorporated into the 1973 Brazilian Indian Statute (26,27).

The administrative process of land regularization involves three initial steps: identification of an area with an indigenous population, interdiction to legally protect the area from outside incursions, and delimitation of the boundaries based upon a set of technical studies. At this point, the proposed reserve is physically demarcated and then, with Presidential review and approval, officially recorded in federal and local land registries. The Federal government maintains title to the Indian lands, but the law provides that indigenous peoples will have "permanent possession" and "exclusive use" of natural resources.

The 1973 Indian Statute stated that FUNAI would follow this process and regularize all indigenous lands by 1978. This never occurred, and areas occupied

by indigenous groups were opened to development by highways, land settlement and agribusiness schemes (28). Conflicts occurred over rights to indigenous lands and their physical boundaries, especially as the government undertook regional development projects such as the Trans-Amazon Highway, the Northwest Regional Development Program (Polonoroeste) and the Grande Carajas Program.

In response to these land conflicts, in 1983, the government added an additional step to the land regularization process. It created a special Inter-Ministerial Work Group, comprised of representatives of the Interior Ministry (where FUNAI was then located) and the Ministry of Agrarian Reform and Development (where the National Institute of Colonization and Agrarian Reform was located). Later, representatives of state land agencies and the military's National Security Council were added to the Work Group. This group reviewed all proposals for reserves submitted by FUNAI, made recommendations on their delimitation and issued decrees authorizing their demarcation. Essentially, this removed the control over delimitation of indigenous lands from FUNAI and gave more weight to political and military rather than technical considerations in the physical demarcation and regularization of reserves. It also made the process of indigenous land regularization administratively cumbersome and led to long delays (29).

A Brazilian NGO (Centro Ecumenico de Documentacao e Informacao, CEDI) and a group of anthropologists at Brazil's National Museum (Projeto Estudo sobre Terras Indigenas no Brasil, PETI) have been systematically documenting and analyzing this indigenous land regularization process. In 1990, CEDI/PETI found that there were 526 areas of which 90 were not identified, 80 identified but not interdicted, 67 interdicted, 93 delimited, 136 demarcated and confirmed by Presidential decree, and only 60 fully regularized. While the area of land identified as being Indian occupied totalled 79.1 million hectares, the amount of land actually registered by this date was only 10.9 million hectares, or 13 percent of the total area of indigenous lands (see Table 1, 30).

In those areas where there were internationally-funded regional development projects, the pace of land regularization was quicker than the national norm.

In the Polonoroeste area, for example, between 1982 and 1988, FUNAI demarcated a total of almost 7 million hectares of land as indigenous reserves in 34 indigenous areas, of which 20 totalling 5.4 million hectares were fully regularized. An additional 2.9 million hectares of land were officially identified by the government, but not demarcated; and, 16 indigenous areas, with an estimated 1.9 million hectares, were still to be identified (31).

Despite the fact that FUNAI was able to regularize relatively large amounts of indigenous land, it was not able to actually protect them from outside encroachments. Of 518 indigenous areas included in a 1987 CEDI/PETI study, 214 or 41 percent experienced or were scheduled to be affected by the impacts of placer mining, mineral exploration, hydroelectric developments, or highway construction. In areas of rapid economic expansion, even fully regularized indigenous reserves were vulnerable to encroachment (32).

Recently, there have been several changes in the Brazilian situation, especially as regards land regularization. These include new provisions in the 1988 Brazilian Constitution recognizing indigenous land rights; the transfer of FUNAI from the Ministry of the Interior to the Ministry of Justice; the elimination of the Inter-Ministerial Work Group; and the streamlining of the demarcation process. In 1991 and 1992, the government demarcated several important indigenous areas, including the 9.4 million hectare Yanomami reserve in Roraima and the Menkragnoti-Kayapo reserve in Mato Grosso, which has a perimeter of 1500 kilometers and borders the Xingu Indian Park (33,34).

While these steps have improved the administrative process of regularizing indigenous lands, they do not address the structural problems of a protectionist approach. In fact, a major problem in this model is the existence of a bureaucratic, centralized agency which lacks the technical competence, financial resources and political authority to defend indigenous lands. Furthermore, this model impedes the ceding of authority to indigenous peoples and does not recognize their own models of land tenure, social organization and resource management. Those articles in the new Brazilian Constitution relating to Indian rights are general enough to include an alternative model, but this has yet to

be applied in practice (26).

Native Communities (Bolivia, Ecuador, Peru). In contrast to the Brazilian model's reliance on a system of indigenous reserves, an integrationist approach towards indigenous land tenure was adopted by the Andean countries. Countries such as Bolivia, Ecuador and Peru rely on laws incorporated into the agrarian reform codes under which land titles are granted to separate Indian communities. In these countries, the majority of indigenous people live in the highland plateaus. Over time, these highland peoples were settled into nucleated communities and integrated into the rural market economy. National policy then treated these indigenous communities as peasants, subject to the same legal and administrative procedures as non-Indians. Under these provisions, each separate community must follow the relevant legal procedures to receive title to land. This leads to the creation of smaller parcels of land, which are usually determined by the total size of the population rather than cultural or ecological considerations (35, 36).

The Andean agrarian reform laws defined Indian communities not in terms of indigenous forms of political organization (e.g., the ayllus inherited from the pre-Colombian Incaic period), but according to a nationally uniform model of peasant organization. Thus, in Bolivia after the 1952 Revolution, where peasant and miner movements were strong, the rural syndicate was the major form of community organization introduced to obtain lands. In Ecuador, after the 1964 Agrarian Reform, indigenous communities had to form cooperatives to gain title, although the cooperative here is not the native political structure. Similarly in Peru, following the 1969 Agrarian Reform, to receive land titles and government agricultural credit, local communities had to form into cooperatives (35, 37).

This procedure is problematic for the forest-dwelling indigenous groups who are minority populations in these countries. They are not necessarily organized into discrete communities and their subsistence practices require access to large tracts of land. In Peru, the government passed a special Jungle Law in 1974

(amended in 1978) which enabled native communities to register as legal entities, but limited the size of traditionally occupied or used land which could be titled (38, 39). For 20 Peruvian ethnic groups for which data are available, the government titled an average of only 45.6 hectares per family (see Table 2). The arbitrariness of the size of average land allocations is also noteworthy. For example, for 61 Shipibo-Conibo communities, the range is from 2.86 hectares to 66.87 hectares per family. These small communal and family parcels make it difficult for indigenous groups to practice sustainable natural resource management and often become overpopulated and fragmented within a single generation (17).

These lowland forest-dwellers also face serious administrative problems in gaining titles to their lands. The agrarian reform agencies are politicized and bureaucratic. In Bolivia, for example, there are six or more steps at the regional and national levels that indigenous communities must follow in order to obtain titles. Furthermore, the process of land regularization may be so long (sometimes over a decade) that it is affected by changing political trends and administrations.

In Ecuador, some regimes encourage communal property ownership while others promote individual or family titles. In either case, the process of land regularization has been slow. Meanwhile, indigenous communities are pressured by highland colonists, oil palm plantations and state and private oil companies who covet their lands. Until 1988, only 24 percent of the area recognized as being occupied by indigenous peoples in the provinces of Napo and Sucumbios had been legally titled to communities. Since this time, the National Agrarian Reform and Colonization Institute (IERAC) has accelerated the pace of land regularization, but still large areas occupied and claimed by indigenous peoples remain untitled (40).

Again, it should be stressed that some countries are in the process of changing their laws and procedures as a result of activism by indigenous organizations. In April 1990, for example, the Ecuadorean government granted a 612,000 hectare continuous territory to the Huaorani Indians in the Amazonian

province of Napo; and, in May 1992, outgoing President Rodrigo Borja granted 1.15 million hectares of land in Pastaza Province to three indigenous groups. In Bolivia, there is also a new law under study which recognizes indigenous territories and defines the specific land and resource rights of lowland indigenous groups.

Protected Areas (Brazil, Venezuela, Peru, Bolivia). In the 1960s, as the international conservation movement gained momentum, a number of protected areas were created in Latin America, which contained indigenous groups within their boundaries. Unlike in Africa, where indigenous peoples were forcibly removed from national parks and wildlife refuges, in Latin America the tendency was to leave them within the parks, so long as they maintained their traditional subsistence practices. The classic model was the Xingu Indian Park which, throughout the 1960s, received a great amount of international attention as a result of the attempts of the founders of the park, Orlando and Claudio Villas Boas, to protect both the indigenous tribes and the ecology of the area.

Under impetus from such organizations as the International Union for the Conservation of Nature and Natural Resources (IUCN), several other South American countries followed Brazil in creating protected areas which contained indigenous populations, some of whom had not been contacted by missionaries or government authorities. One case was the Manu Park, which the Peruvian government established in 1973. This park covers 1.5 million hectares of remote highland and lowland rainforest and contains six or seven indigenous groups, among them the Machiguenga, Yaminahua, and several unknown tribes (25).

Whereas In Brazil, joint indigenous reserves and national parks lost favor in the 1970s as a result of administrative conflicts between FUNAI and the wildlife and parks section of the Forestry Institute (IBDF), the model remains strong elsewhere. In the 1970s, the Venezuelan government established a number of national parks and other types of protected areas in the Orinoco and Amazon regions, in order to conserve and develop the resources of the southern part of the country. Many of these reserves contain indigenous peoples who have not received any prior legal protection under the Venezuelan agrarian reform laws.

During this period, the government's new Ministry of Environment and Renewable Natural Resources (MARNR) established five national parks totalling 5.2 million hectares in the State of Bolivar and Territory of Amazonas all of which coincide with indigenous territories. In the 1980s, a number of Venezuelan scientists and environmentalists petitioned the government to establish a joint National Park and indigenous area for the Yanomami Indians (41).

More recently, as part of the UNESCO "Man in the Biosphere" Program, governments in collaboration with international conservation organizations have created several parks which contain indigenous communities in their core areas or buffer zones. The earliest of these parks was established in Central America (e.g., La Amistad in Costa Rica and the Rio Platano reserve in Honduras), but there have also been attempts to establish integrated biosphere reserves in parts of lowland South America. The most well-known of these is the Beni Biosphere Reserve in Bolivia, which was the object of the world's first "debt-for-nature" swap and contains several settlements of Chimanes and Moxeno Indians. The Venezuelan effort to create a protected area for the Yanomami has also been designed within the framework of the "Man and the Biosphere" Program.

While these parks can satisfy the territorial needs of indigenous groups, they pose several problems for sustainable resource management. First, in all of these areas, the indigenous peoples do not possess legal title which would secure their permanent rights to the use of lands and natural resources. To the contrary, the assumption is that if these lands are legally granted to the indigenous peoples, they will eventually exploit them in the same ways as other populations or lease their resources to outsiders. Therefore, all rights are invested in the government for the purpose of preserving these lands as examples of "pristine" nature.

Apparently, this was the assumption in the Beni Biosphere Reserve where the Bolivian Forestry Institute and the private environment organization Conservation International designed the park with limited participation by the region's indigenous inhabitants. After the Bolivian government announced the "debt-for-nature" swap agreement, the indigenous peoples through their regional

organizations protested the idea behind the reserve, including the granting of timber concessions in the buffer zone to private companies. The Indians also protested the lack of recognition of their ancestral territorial claims and, through a march to La Paz, persuaded the government to recognize their land rights (42).

The conventional parks or protected area model considers indigenous peoples as part of the "natural" environment and as contributing to the scientific and tourist interest of the park. Rarely, do indigenous peoples participate in the design or management of these protected areas, except in minimal roles as park employees or tourist guides. The designers of these parks view Indians as static "stone-age" inhabitants of the forest, rather than as active managers of the environment and its resources. Furthermore, there is an assumption that if indigenous peoples change their traditional modes of livelihood, they will become a threat to the park and hence subject to fines or relocation.

Increasingly, conservation organizations are seeing the fallacy of these assumptions, especially given the inability of government wildlife agencies to protect these parks from colonization and other forms of outside encroachment. An emerging position is that indigenous peoples should be given a co-equal role in the design and implementation of protected area management plans. The terms of such co-management arrangements, however, have still to be worked out and are a subject of contention between indigenous peoples and environmentalists (25, 43).

Exceptional Cases (Panama and Colombia). Panama and Colombia provide exceptions to the land tenure models described above, because they recognize some degree of indigenous territorial control and provide for limited autonomy or self-rule. The key concepts for understanding indigenous land tenure and political organization in these countries are the comarca and resguardo respectively. Both of these concepts derive from Spanish colonial usages, but have taken on special meanings in the context of contemporary Panamanian and Colombian indigenous policies.

In Panama, the concept of comarca historically referred to a frontier

territory inhabited by indigenous peoples. Following a rebellion by the Kuna Indians of San Blas in 1925 and subsequent negotiations, the Panamanian government recognized a "reserve" for them in 1930. Later, the government also designated reserves for the Guaymi Indians in the western provinces and the Bayano Kuna of the Darien region. These reserved areas did not provide any formal government recognition of indigenous administration and control of their territories. It was not until 1938 that the San Blas territory was officially designated as a comarca. As a result, the Kuna won the right to regulate internal affairs using their indigenous political system but recognized Panamanian jurisdiction over their territory. A charter to this effect came into force in 1953, and has since regulated the internal and external relations of the San Blas Kuna.

The government of General Omar Torrijos incorporated indigenous rights into the 1972 Constitution and promised to create several new comarcas on the model of San Blas. In the 1970s, representatives from all of Panama's indigenous groups held congresses where they supported the establishment of comarcas as a means of recognizing their territorial and political rights. Of these groups, only the Embera were successful in getting a comarca; the others, and in particular the Guaymi, still have outstanding territorial claims before the government (44).

In the 1980s, the San Blas Kuna established PEMASKY, the first indigenously managed scientific park project in Latin America. This project enabled the Kuna to resist settler encroachments on their territory and to protect their lands against deforestation (45). International conservation organizations hailed PEMASKY as a model of sustainable forest management. Relatively few of them recognized the importance of the comarca as a necessary condition for the establishment of the park. Without this juridical recognition, the Kuna would have found it more difficult to make decisions about the use of their territory and may have been forced to accept other alternatives, such as a prior government attempt to promote tourist resort development on the San Blas Islands.

In Colombia, the resguardo refers to the lands occupied by indigenous communities and is linked to the cabildos or community councils through which they are governed. Originally, all the Colombian resguardos were located in the Andean area. Following the agrarian reform of the early 1960s, the Colombian Institute of Agrarian Reform (INCORA) began to extend the resguardos in the Andean zone and create "reserves" in the tropical lowlands. For a number of years, it was uncertain just what types of rights the indigenous peoples had to these reserves. However, as the Andean Indian movement became stronger and as lowland indigenous groups formed into regional organizations, they began to pressure the government to convert all indigenous territories, including the reserves, into resguardos with their associated rights of self-government. Such recognition took place in 1988 (46).

Since then, the Colombian government has been in the forefront of recognizing indigenous territories in its Amazon region. In 1988, it declared the 5.2 million hectare Putomayo Estate as an indigenous resguardo; and, by the end of 1989, over 18 million of the 40 million hectares of land in the Colombian Amazon had been allocated as resguardos to indigenous groups. One of the novel aspects of the Colombian policy was the recognition of Indians as the protectors of Amazonian ecology and their participation in the co-management of the regional national parks (47).

The Colombian Constitution of 1991 includes a special section on the administration of indigenous territories. Among other things, the indigenous peoples are provided with the rights to make decisions about natural resource management and socio-economic development plans within their territories.

In summary, a large amount of land has been recognized as being Indian occupied in lowland Central and South America. Table 3 shows data on the amount of indigenous lands recognized by the Amazon Treaty Organization countries (48). While Panama and Colombia recognize some degree of indigenous political autonomy along with territorial claims, the majority of countries still look at land allocation outside of a framework of indigenous resource management and self-determination. As we shall see, this approach is being challenged by the new

indigenous organizations which have gained increasing influence throughout Latin America in recent years.

The Indigenous Territory Model

Beginning in the 1960s, lowland indigenous peoples began to form into local and regional organizations to defend their interests and resources. The first of these modern lowland indigenous movements occurred among the Shuar of Eastern Ecuador, who organized a federation to represent the interests of their affiliated centros and established a bilingual radio station to increase communication among their widely dispersed settlements. Throughout the 1970s, similar organizations appeared in Peru, Ecuador, Bolivia, Colombia, and Venezuela as a means by which Indians could represent their interests before the government and gain titles for their communal lands.

As they gained strength, these regional organizations formed alliances among themselves and across national boundaries. In 1984, the various lowland Indian organizations formed a Coordinating Body of Indigenous Organizations of the Amazon Basin (COICA), which presented a united indigenous position before such international bodies as the Amazon Treaty Commission, the International Labor Organization, the UN Working Group on Indigenous Populations, and multilateral agencies such as the World Bank and Inter-American Development Bank. In May 1990, COICA called a summit of environmental organizations in order to promote the participation of indigenous peoples in the international defense of Amazonian ecology.

It was out of these organizational initiatives that a new model of indigenous land tenure and resource management emerged. The central concept in this model is the idea of the "indigenous territory." This concept differs from the previous models in that it integrates the land and resources which Indians need in terms of their economic survival with their cultural conceptions of space and their forms of social and political organization. The indigenous organizations affiliated with COICA are attempting to create a new vision of Indian lands, in which indigenous peoples have the capability of protecting forest ecology with a greater degree of autonomy (8).

There are several implications of this indigenous territorial model which differentiates it from previous efforts. First, indigenous organizations are seeking land areas which are large enough to provide for the conservation, use and management of tropical forest ecosystems. Some organizations are using existing forestry and conservation laws to make territorial claims which are not recognized under conventional agrarian or Indian laws. A case in point is the establishment of the Awa Ethnic Forest Reserve on the border between Ecuador and Colombia.

In the face of expanding colonization and lumber extraction activities, the Ecuadorean Awa claimed a 100,000 hectare area which extends over 250 km. of rainforest. They circumvented the Ecuadorean agrarian reform law which favors small titles and, with the assistance of the National Indian Confederation (CONAIE), convinced the government to provide them with lands that were designated as an "ethnic forest reserve." This is the first such reserve in the history of Ecuador. In exchange for the Awa's agreement to protect the forest resources of the area, the government resettled and provided land titles to colonists on the periphery of the reserve. It has also opened up discussions with the Colombian government to create an "Indigenous Territory and Binational Biosphere Reserve" which will recognize indigenous land rights and protect the ecology on both sides of the frontier (8, p. 69).

In Peru, regional Indian organizations, led by the Inter-Ethnic Association for the Development of the Peruvian Amazon (AIDSEP), have been actively involved in consolidating small parcels of land titled to native communities into larger territories. They are also making claims, under the country's forestry laws, for larger areas which are more conducive to sustainable resource management. For example, the Machiguenga of the Upper Urubamba River moved further down river after colonists invaded their lands, consolidating the lands of several communities and joining them to a 440,000 hectare state forest reserve. Using a similar strategy, a number of Ashanika communities in the Pichis Valley of the Central Jungle have proposed to the government the establishment of a million hectare Communal Reserve in the Cordillera de "El Sira" in which they would have

usufruct rights in exchange for protecting the flora and fauna of the region (8, pp. 74 and 75).

A second aspect of this model is that it provides for both indigenous participation and state cooperation in the definition and delimitation of territories. Perhaps, the clearest example of this trend is among the Shuar Federation of Ecuador, who have formed their own native topographic teams to demarcate their lands. Using community labor and working closely with IERAC, the Federation has been able to physically demarcate the lands of numerous communities which would have remained undemarcated if left to government topographers alone.

Similar initiatives are taking place in Peru. Indian organizations, under the leadership of AIDSEP and with financial assistance from the Danish International Development Agency (DANIDA), are carrying out a land titling project which includes the active participation of indigenous communities in the identification and demarcation process. These efforts, which are less costly than those carried out by government agencies alone, have speeded up the pace of land regularization. Furthermore, they encourage indigenous communities to protect their lands, especially against outside encroachments; and, they establish boundary markers which are more consistent with indigenous conceptions of territory and space than those of Western topographers (49).

Lastly, the new indigenous territory model has the potential for enhancing the long-term development of natural resources and local communities. While the indigenous organizations have focussed most of their efforts to date on the identification and demarcation of their territories, they also recognize that without a systematic program of resource management which speaks to the economic needs of their people such territories will be of little long-term value. A number of these organizations have begun small pilot projects which combine traditional subsistence practices with external technical assistance and training in local economic development and natural resources management.

In Peru, there are some very promising experiments of this type. One example is AIDSEP's Integral Community Family Gardens (HIFCO) project, which combines

traditional Indian with Western organic gardening techniques. The idea behind this project is to maintain the natural diversity of the forest ecosystem, while increasing household food production.

On a more commercial level, the Yanesha Forestry Cooperative in the Palcazu Valley of Peru has introduced a strip shelterbelt method of sustained yield natural forestry management. This system was based upon research on the ecological dynamics of tropical forests in Asia and America and then adapted to the traditional styles of decision-making and organization of the Amuesha communities who belong to the cooperative. While the cooperative is not without problems, it has been recognized as a model for how to transfer scientific research and technology to an indigenous setting (50).

In other countries, indigenous organizations are seeking ways of rehabilitating depleted fish and wildlife resources. In Colombia, for example, the Puerto Rastrojo Foundation, comprised of biologists and anthropologists, has been working with local indigenous communities to protect freshwater turtle and caiman populations endangered by overhunting and fishing. The success of some of these initial efforts in fish and wildlife conservation is one reason for the Colombian government's policy of recognizing large indigenous land areas in the Amazon (51).

Finally, indigenous organizations are calling for more active participation in the design and management of biosphere reserves. The case of the Beni Biosphere Reserve in Bolivia has already been mentioned. There are also some recent examples from Central America, such as the Rio Platano Biosphere Reserve and the proposed Tawahka Sumu Forestal Reserve in Honduras, La Amistad Biosphere Reserve on the border between Costa Rica and Panama, the Miskito Coast Protected Area in Nicaragua, and the Darien Biosphere Reserve in eastern Panama. These are all at very early stages of development, but they indicate the growing interest of indigenous organizations to work with conservationists and land-use planners in the preservation of threatened ecosystems.

Implementing the Indigenous Territory Model

The examples mentioned above represent attempts by indigenous organizations to secure territories within the existing framework of national land laws and procedures. However, the further institutionalization of this model will require additional measures. One immediate priority is legislative reform which recognizes the legitimacy of indigenous territories and speeds up the process of land regularization. As pointed out earlier, much of the old legislation is based upon outdated protectionist or integrationist views which have been obstacles to the security of indigenous lands and the participation of indigenous peoples in their management. Furthermore, much of the current forest, parks and wildlife legislation in Latin America does not take account of indigenous peoples.

There are already some precedents for legislative reform in such countries as Colombia and Bolivia, where national governments have introduced policies or legislation which is more in keeping with the demands of indigenous organizations. The revised ILO Convention 169 on Indigenous and Tribal Peoples, which provides for the recognition of indigenous lands and territories, has now been ratified by Colombia and Bolivia. There is some expectation that other governments such as Venezuela, Peru, Ecuador and Brazil might also follow suit. Indigenous organizations, such as COICA, are also calling for reform in environmental legislation, so that indigenous territorial rights will be recognized in national conservation legislation.

This legislative reform should also include changes in administrative procedures which will make the process of land regularization more efficient. The responsibility for changing legislative frameworks lies principally with national legislatures, but it can be encouraged by international agencies and organizations.

A second priority is the provision of technical assistance to indigenous communities which integrates resource management training with local-level economic development. Past regional development projects which have included technical assistance components have been based upon the assumption that technology transfer (e.g., intensive cash crop cultivation) is unidirectional

from Western "scientific" experts to indigenous communities. Another extreme is to over-romanticize the ability of indigenous peoples to manage large territories, especially when they have undergone significant cultural change and are faced by severe economic pressures.

An alternative approach is to draw upon both Western and indigenous knowledge systems. Such an approach should be participatory and based upon a "partnership" among scientists, technical experts, and indigenous peoples in the common quest for natural resource management strategies which are culturally appropriate and economically sustainable. Some attempts in this direction have been proposed in the recent discussions concerning "extractive reserves;" however, much more empirical work and field testing needs to be carried out to demonstrate the viability of these strategies.

Projects or models which may be adaptable to one community, cultural group, or ecological setting may not necessarily be replicable. Therefore, a wide diversity of approaches should be tried and disseminated among indigenous groups, scientists and technical assistance agencies.

Applied research also needs to be conducted on the adaptability of indigenous land and resource management practices to various settings. For example, we still lack a clear understanding of the population and productive carrying capacity of the environments inhabited by lowland indigenous populations; or, what the ecological impacts will be of population growth, technological innovation and integration of indigenous communities into regional and international economies.

There is also an important issue surrounding the transferability of indigenous knowledge and resource management technologies to non-indigenous populations, including those which are modified through experimentation and contact with Western science and conservation practices. Most of the indigenous areas described in this paper are surrounded by poor colonists who often also lack land tenure security and access to technical assistance. The challenge is how to bring together both of these sectors into a common development and conservation effort.

Lastly, indigenous organizations and communities should fully participate in the design and benefits of the new financial arrangements which have been created for protecting tropical forests and their biodiversity. As noted, the early "debt-for-nature swaps" which received so much international attention did not take into account the territorial claims or needs of resident indigenous populations.

Conclusion

In this paper, we have argued that the conventional models of land tenure contained in national Indian, agrarian and protected area laws in Latin America have provided relatively limited protection to indigenous peoples and the tropical forest ecosystem. These models emerged during an era when most governments were more concerned with the rapid occupation and exploitation of frontier zones and the assimilation of indigenous peoples. The recent attention given to the environmental degradation of these areas and the need to create alternative models of land use and development have directed attention to the potential contribution of indigenous peoples to the conservation and management of the vast tropical forests of Latin America.

Indigenous communities and organizations have recently proposed a new model of territorial protection based upon indigenous knowledge systems and land-use practices. While this model has the potential of conserving large areas of the rainforest, to be successful it will need juridical recognition by national governments as well as international technical, scientific and financial support.

We contend that there needs to be a new relationship among indigenous peoples, scientists, national governments and international organizations for the conservation and sustainable use of the world's tropical forests. This relationship should be a contractual one, whereby indigenous peoples are provided with juridical recognition and control over large areas of forest in exchange for a commitment to conserve the ecosystem and protect biodiversity.

While indigenous organizations are aware of the difficulties involved in gaining recognition and protection of their territories, they believe that this is the only means of designing a feasible conservation and development strategy

for the world's remaining rainforests. The challenge now is for national governments and international institutions to engage these organizations in a series of country and regional dialogues toward the implementation of such a strategy. Tropical forest scientists should be asked to participate in these dialogues and set their research agendas with this strategy in mind.

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TABLE 1 (30)

LEGAL SITUATION OF INDIGENOUS AREAS IN BRAZIL
(1990)

Legal Situation	No of Indigenous Areas	%	Area in Hect	%	Population
Not Identified	90	17.11	37,598	0.05	6,802
Identified	80	15.21	11,651,331	14.72	40,774
Interdicted	67	12.74	30,007,419	37.92	17,329
Delimited	93	17.68	10,264,111	12.97	46,969
Demarcated and Confirmed	136	25.86	16,321,220	20.62	91,364
Regularized	60	11.41	10,853,773	13.72	32,378
TOTAL	526	100.0	79,135,452	100.0	235,616

DEFINITIONS:

Not Identified: Lands known to be occupied by indigenous peoples but awaiting formal identification as Indigenous Areas (IAs) by the National Indian Foundation (FUNAI).

Identified: IAs formally identified by FUNAI.

Interdicted: IAs where a formal decree has been issued by FUNAI announcing indigenous occupancy and intent to proceed with delimitation and demarcation.

Delimited: IAs where technical studies have been conducted by FUNAI and boundaries have been formally noted on government maps.

Demarcated: IAs where the actual physical demarcation of boundaries has been done and confirmed by presidential decree.

Regularized: IAs whose titles have been registered in the federal, state and municipal registries.

TABLE 2 (17)

NUMBER OF HECTARES PER FAMILY IN PERUVIAN NATIVE COMMUNITIES BY ETHNIC GROUP

ETHNIC GROUP	NUMBER OF NATIVE COMMUNITIES TITLED	MINIMUM NUMBER OF HECTARES/P FAMILY	MAXIMUM NUMBER OF HECTARES/P FAMILY	AVERAGE NUMBER OF HECTARES/P FAMILY
Achuara	3	30.47	63.66	41.58
Aguaruna	4	28.86	143.28	112.75
Arabela	1	50.00	50.00	50.00
Arahuaca	1	104.09	104.09	104.09
Bora-Ocaina	7	7.00	95.00	32.32
Campa-Ashaninka	5	6.99	33.19	17.40
Candoshi S.M.	2	112.99	128.23	121.11
Cashinahua	2	4.11	35.03	19.57
Culina	2	14.43	20.42	17.25
Huitoto	9	3.79	161.46	45.32
Kichwa Napo	36	7.16	65.27	37.18
Kichwa Pastaza	2	26.49	89.17	57.83
Piro	6	3.02	76.87	20.50
Orejon-Coto	2	13.11	196.61	104.50
Secoya	2	22.00	34.48	28.24
Sharanahua	2	6.59	23.24	14.92
Shipibo-Conibo	61	2.86	66.87	15.96
Ticuna	6	3.73	57.41	24.42
Yagua	12	4.00	64.09	29.67
Yaminahua Amahuaca/Piro	1	15.57	15.57	15.57
Total average for all ethnic groups -				45.63 hectares/p family

Table 3 (48)
LANDS SET ASIDE IN AMAZON COOPERATION TREATY MEMBER
COUNTRIES FOR INDIGENOUS POPULATIONS

Country	Number of Ethnic Groups	Estimated Indigenous Population	Extent of Lands set aside (Hectares)
Bolivia	31	171,827	2,053,000
Brazil	200	213,352	74,466,149
Colombia	52	70,000	18,507,793
Ecuador	6	94,700	1,918,706
Peru	60	300,000	3,822,302
Guayana	9	40,000	n.a.
Suriname	5	7,400	n.a.
Venezuela	16	386,700	8,870,000
TOTAL	379	935,949	109,637,950

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